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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yoshiaki Doi

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EXAMINER

NGUYEN, HIEU P

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/821,909	Applicant(s) DOI, YOSHIAKI	
	Examiner Hieu P. Nguyen	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luz et al. (U.S. 6661284) in view of Wokstein (U.S. 5222246).

Fig. 3A of Luz discloses a multiport amplifying apparatus (similar to Applicant's Fig.6) comprising: an input hybrid network (320) having a plurality of input ports (see detail of Fig. 3A, port: 320a-320d); a plurality of amplifiers (350-353) connected to the output of said input hybrid network; and an output hybrid network (360) connected to the outputs of said amplifiers and having a plurality of output ports (see detail of Fig. 3A, ports: C through F), wherein said input hybrid network receives digital quadrature baseband signals [col. 6, lines 9-22] from said plurality of input ports, and evenly distributes the input digital quadrature baseband signals to said plurality of amplifiers.

Luz fails to disclose "a digital frequency converter disposed in front of said input hybrid network". However, Wolkstein discloses in Fig. 6 an analogous circuit having an input hybrid network (222), a plurality of amplifiers (232), an output hybrid network (242) and a frequency converter (620) disposed in front of said input hybrid network (222). However, it would have

been obvious to one having ordinary skill in the art at the time of the invention was made to incorporate the teachings of Wolkstein by having a frequency converter disposed in front of said input hybrid network (note: a frequency converter can be digital or analog depending on the implemented system). The ordinary artisan would have been motivated to modify Luz in the manner set forth for at least the purpose of changing one frequency to another as mentioned in col. 8, lines 11-17.

Regarding claim 2, Luz and Wolkstein disclose everything claimed as applied to claim 1. In addition, Fig. 3A of Luz implicitly shows the multiport amplifying apparatus, wherein: said input hybrid network comprises: 2^n of said input ports (S1, S2, S3, S4); and $2^{n-1} \times n$ hybrid circuit (321 and 322), wherein each of said hybrid circuits is a digital hybrid circuit [col. 5, lines 14-16] for processing a digital quadrature baseband signal.

Regarding claim 3, Luz and Wolkstein disclose everything claimed as applied to claim 2. In addition, Luz implicitly discloses the multiport amplifying apparatus, wherein said digital hybrid circuit is a digital quadrature baseband hybrid circuit comprising: an adder (not shown) for adding incoming digital quadrature baseband signals; and a subtractor (not shown) for subtracting one digital quadrature baseband signal from another (see detail of Fig. 4, outputs of V3 and V4 shows sums and differences related to V1 and V2).

Regarding claim 4, Luz and Wolkstein disclose everything claimed as applied to claim 1. In addition, Fig. 3A of Luz shows that the multiport amplifying apparatus, wherein: said output hybrid network comprises: 2^n of said output ports; and $2^{(n-1)} \times n$ output hybrid circuits (in this case, $n=2$), wherein each of said output hybrid circuits is an analog hybrid circuit [col. 5, lines 17-19] for processing an analog RF-band signal.

Regarding claim 7, Luz and Wolkstein discloses everything claimed as applied to claim 1. In addition, Fig. 3A of Luz disclose the multiport amplifying apparatus, wherein said input hybrid network (310 & 320) further comprises: a complex multiplier (see detail of Fig. 3A, gain/phase adjusters 315-318) for adjusting the amplitude and phase of the digital quadrature baseband signal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luz and Wolkstein.

Regarding claim 5, Luz and Wolkstein disclose everything claimed as applied to claim 1 except for “said amplifier is a digital quadrature baseband signal input type amplifier” instead of analog input type amplifier. However it would have been obvious to one having ordinary skill in the art at the time the invention was made to use digital input type amplifier along with a D/A converter to deliver an analog RF-band signal. The ordinary artisan would have been motivated to modify Luz and Wolkstein in the manner set forth to obtain a better output signal.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luz and Wolkstein in view of Schiemenz et al. (US 5834972).

Regarding claim 6, Luz and Wolkstein discloses everything claimed as applied to claim 1. In addition, Fig. 3A of Luz shows the multiport amplifying apparatus, further comprising a converter circuit disposed behind said input hybrid network for converting a digital quadrature baseband signal to an analog RF-band signal, said converter circuit including: a digital-to-analog converter (see detail of Fig. 3A, D/A 340-343) for converting the digital quadrature baseband signal to an analog quadrature baseband signal; and a quadrature modulator (345-348) for modulating the analog quadrature baseband signal. Luz doesn't disclose "a filter for filtering out an aliasing component". However, Schiemanz discloses a multiport amplifying apparatus, wherein the converter circuit [see Fig. 7, filter 108] including: a filter, D/A and modulator.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to incorporate the teachings of Schiemenz into the circuit of Luz and Wolkstein by adding a filter in the converter circuit. The ordinary artisan would have been motivated to modify Luz and Wolkstein in the manner set forth for at least the purpose to smooth the edges of digital signal to minimized rapid signal transitions, which could results in radio frequency emissions outside the allocated bandwidth. [Schiemenz: col. 3, lines 59-61].

Conclusion

Allowable Subject Matter

Claim 9 is allowed.

The following is an examiner's statement of reasons for allowance:

Claim 9 is allowed over the prior art of record. The prior art of record, considered individually or in combination, fails to fairly teach or suggest the claimed circuit comprising, among other limitations and unobvious limitations of “a baseband combiner disposed in front of the input hybrid network for combining a plurality of the digital quadrature baseband signals” structurally and functionally interconnected with other limitations in the manner as cited in the claim(s).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu Nguyen whose telephone number is 571-272-8577. The examiner can normally be reached on M-F 8-5.

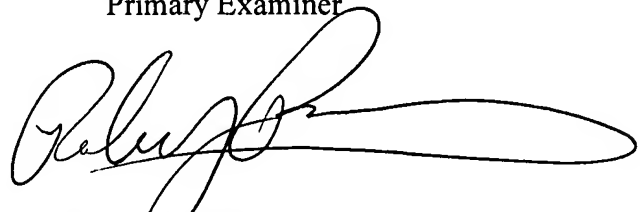
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hieu Nguyen
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hn

Robert Pascal
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